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# Pain and psychological health status in chronic pain patients with migration background—the Zurich study

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**Abstract** The objective of this paper is to investigate whether there were differences in pain and psychological health status in chronic pain patients with and without migration background before and after an 8-week interdisciplinary outpatient pain programme (IOPP). One hundred eighteen consecutively assessed patients were included. Pain and psychological health were recorded prior to and after the intervention, and at the 3-, 6- and 12-month follow-up. The migrant group experienced a statistically significant and clinically relevant higher amount of pain and worse psychological functioning than the non-migrant group at all time points. Statistically significant differences between the groups for the variables depression, anxiety, kinesiophobia and passive coping, in particular catastrophizing, were observed in the short and long term. The non-migrant group improved continuously on all outcome measurements at all time points. The results show differences in outcome for chronic pain patients with and without migration background. High pain intensity, high levels of depression, anxiety and catastrophizing at baseline appear to be major barriers for improvement in a sample of migrant patients when participating in an IOPP. Treatments may have to be tailored to the specific needs of this patient group to better address their poor psychological health status and to improve the course of the pain disorder.

**Keywords** Chronic pain · Interdisciplinary treatment · Migration background · Outpatient pain programme · Psychological health

## Introduction

Chronic pain is a major health care problem, a costly condition, and multifaceted in nature. The chronic pain experience is shaped, amongst others, by social, economic, psychological and cultural factors. Migration can be seen as a process involving all of these aspects with positive as well as negative effects on a person's health. Research highlights the complex interaction between migration and health, and mentions cultural, socio-economic and migration-specific factors as important determinants for well-being [1, 2]. Over the last two decades, an increasing body of evidence has shown that patients with a history of migration have a more unfavourable treatment response in musculoskeletal disorders [3], a poorer performance in programmes that aim at improving workability [4] and a worse course of their pain disorder [5] compared to patients without a migration background. It was shown that the degree of inclusion in the Swiss society influenced the outcome of the migrants' pain disorder irrespective of nationality [4].

Green et al. have demonstrated differences in acute and chronic pain treatment, more functional deficits and higher psychosocial distress in chronic non-malignant pain patients of diverse ethnic backgrounds compared to non-Hispanic whites in the USA [6]. Furthermore, the results for psychological variables, such as depression scores and number of affective disorders, were significantly higher, whereas scores for psychological quality of life were significantly lower in a sample of migrants diagnosed with somatoform pain disorders compared to non-migrant patients [7]. A recent article points towards migration status as a main factor for health

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inequalities [8]. Furthermore, lower socio-economic status, lower occupational class and income are social risk factors for a higher morbidity rate among migrants in Europe [2].

In Switzerland, 22.4 % of the population has a migration background with a percentage of 31 % in Zürich [9]. Migrants from the Balkan countries accounted for 14 % of the migrant population in Zürich in 2008 [10]. Hämmig and Bauer demonstrated in a survey that migrants living in Kanton Zürich had statistically significantly more negative emotions, less joy in life, more GP consultations and less life satisfaction than Swiss native citizens; furthermore, the health status of migrants was worse in a number of domains such as musculoskeletal and movement problems, sleep disturbances and somatization, the latter showing a higher rate when psychosocial problems were present [11]. From a biological perspective, a large number of Swiss migrants are unskilled workers in demanding manual jobs that expose them to heavy loads and high risks of injury. Psychological factors such as the cumulative stress of migration (loss of family or friends, loss of status, discrimination, forced migration, trauma and lack of social support) might contribute considerably to poorer psychological well-being [10, 11]. Social issues such as barriers to accessing health care (for example, insufficient competency in the language of the immigrated country), illness behaviour potentially influenced by cultural aspects and cultural differences in the relationship between health care provider and patient might compromise the migrants' ability to cope with disease or chronic pain [8, 10, 12]. Passive coping was found to be strongly linked to depression and general psychological distress in chronic pain patients [13]. In addition, changes in coping were statistically significantly associated with changes in pain severity and depression after a multidisciplinary treatment approach [14]. Taken together, these facts could have a detrimental effect on a person's psychological well-being.

The aim of the study was to investigate pain and psychological health status in chronic pain patients with migration background before and after an 8-week interdisciplinary outpatient pain programme between 2006 and 2009 in comparison to Swiss native patients.

## Patients and methods

One hundred eighteen consecutively assessed patients answered the given set of questionnaires before and after an interdisciplinary outpatient pain programme (IOPP) for reasons of quality control at the Division of Rheumatology and Institute of Physical Medicine at the University Hospital Zurich. The patients were recruited exclusively through referral and were carefully pre-assessed prior to entry into the programme from all disciplines involved [15, 16]. They were included in the programme if the following criteria were fulfilled:

- Pain for more than 3 months (chronic)
- Psychosocial distress situation (work, social assistance, social entourage)
- Persisting pain syndrome limiting the person's social, occupational or recreational abilities and failure of previous, mono-disciplinary interventions
- Age between 18 and 65 years
- Satisfactory level of motivation
- Readiness to change the pain behaviour

Excluded from this programme were patients with insufficient German language skills. Having adequate communication skills in German is required to understand cognitive-behavioural issues within the setting. Further exclusion criteria were serious medical pathologies, i.e. inflammatory diseases, infections, neoplasm processes or major psychiatric disturbances such as severe psychotic episodes. Additionally, patients involved in a disability allowance process or awaiting a disability pension were also excluded.

The content and the duration of the IOPP are described in detail elsewhere [15, 16]. Briefly, physicians, physiotherapists, occupational therapists, one social worker and psychotherapists trained in the field of chronic pain were involved. The patients undertook an intense 8- to 10-week programme on two mornings per week (8:00–12:30 a.m.), composed of different therapeutic units which consisted of specific group and individual settings.

In this study, the following set of questionnaires was given to the patients:

- Pain intensity (0–10) on a numeric rating scale [17].
- Fear of movement (kinesiophobia) on the Tampa Scale of Kinesiophobia [18]: 68 points are the maximum reflecting maximal fear of movement (kinesiophobia).
- The Hospital Anxiety and Depression Scale for depression and anxiety [19, 20]: 21 points are the maximum reflecting maximal depression or anxiety, respectively. Anxiety or depression questions were given alternatively, starting with an anxiety question “I feel tense or ‘wound up’”. A total score above 10 is abnormal.
- The Coping Strategy Questionnaire [21, 22]: 72 points are the maximum of passive strategies (praying, hoping and catastrophizing), reflecting strong occurrence of passive strategies in patients; 36 points are the maximum of catastrophizing (worst). Passive strategies (praying, hoping and catastrophizing) were evaluated with a maximum score of 72 (worst). The subscale “catastrophizing” consists of the last six items and a maximum score of 36 (worst).

Fifty consecutive patients (41 females, 9 males) with migration background and 68 patients (50 females, 18 males) without migration background (native German language) were included. The native languages of the migrant

patients were as follows: 69 % Slavish, 6 % Turkish, 6 % Portuguese, 5 % Italian, 5 % Spanish, 4 % Indian, 2 % Arabic and 1 % respectively for Polish, African and Greek. Of the participants, 29 % were under 40 years of age, 22 % between 40 and 49 and 21 % above the age of 50. The duration of pain symptoms varied between 3 and 6 months (3 %), 6 months to 1 year (6 %), 1 to 2 years (16 %), 2 to 5 years (22 %) and more than 5 years (26 %). The socio-demographic data, including the educational level of the patients, are shown in Table 1. Fifty-eight percent of the patients with migration background and 12 % of those without migration background were incapable of work; 18 and 19 %, respectively, worked half time. Twelve percent of the non-migrant patients worked less than 50 %, and 10 vs. 15 % of patients had a Swiss invalidity pension.

The participants were diagnosed with pain syndromes b 280X (“sensation of pain”) according to the ICF classification system [23]. An informed consent was obtained prior to the distribution of the set of questionnaires.

After the programme, 91 % of the patients (88 % with migration background vs. 94.4 % without migration background) answered the set of questionnaires. Eleven patients dropped out during the programme due to different reasons: admission/referral to a psychiatric ward ( $n=1$ ), increased psychiatric comorbidity interfering with treatment ( $n=1$ ), programme did not fulfil the patient's expectations ( $n=4$ ), exclusion due to too many days missed ( $n=2$ ), insufficient language proficiency ( $n=1$ ), 75 % pain reduction after chiropractic manipulation ( $n=1$ ). For follow-ups, the questionnaires were sent by mail. The return rate was as follows: At the follow-up, 3 months after finishing the programme, the

number of analysed patients was 77 vs. 81 %, at 6 months 63 vs. 65 %, and at 12 months 50 vs. 53 %, respectively. There is no essential difference between the groups regarding the return rate, which was on average 91 % after finishing the programme as well as 79 % 3 months after, 64 % 6 months after and finally 51 % 12 months after completing the programme.

### Statistical analyses

We analysed the participants in a prospective cohort design with a follow-up period of 12 months. Non-parametric tests were used in the case of ordinal data or non-normal distribution: For overview, Friedmann and Kruskal–Wallis tests were used. To get information about differences between time points within the group as well as between the groups, paired tests became necessary: Wilcoxon test with a two-tailed significance level of  $P<0.05$  (type I error) at baseline, post and 3-/6-/12-month follow-ups to determine changes within the groups over the course of the follow-up period; Mann–Whitney test for testing between the groups at all time points. All statistical analyses were carried out with the PASW Statistics 18 program for Windows (SPSS Inc., Chicago, IL, USA).

### Results

Looking at the socio-demographic variables, the two groups differed in work status and education (Table 1). The analysis showed that the educational level in the migrant group is lower with 40 % having only finished compulsory education compared to 4.4 % in the non-migrant group. Workability was much lower in the group with migration background with 57.9 % of these patients compared to 11.7 % of the patients in the group without migration background completely unable to work.

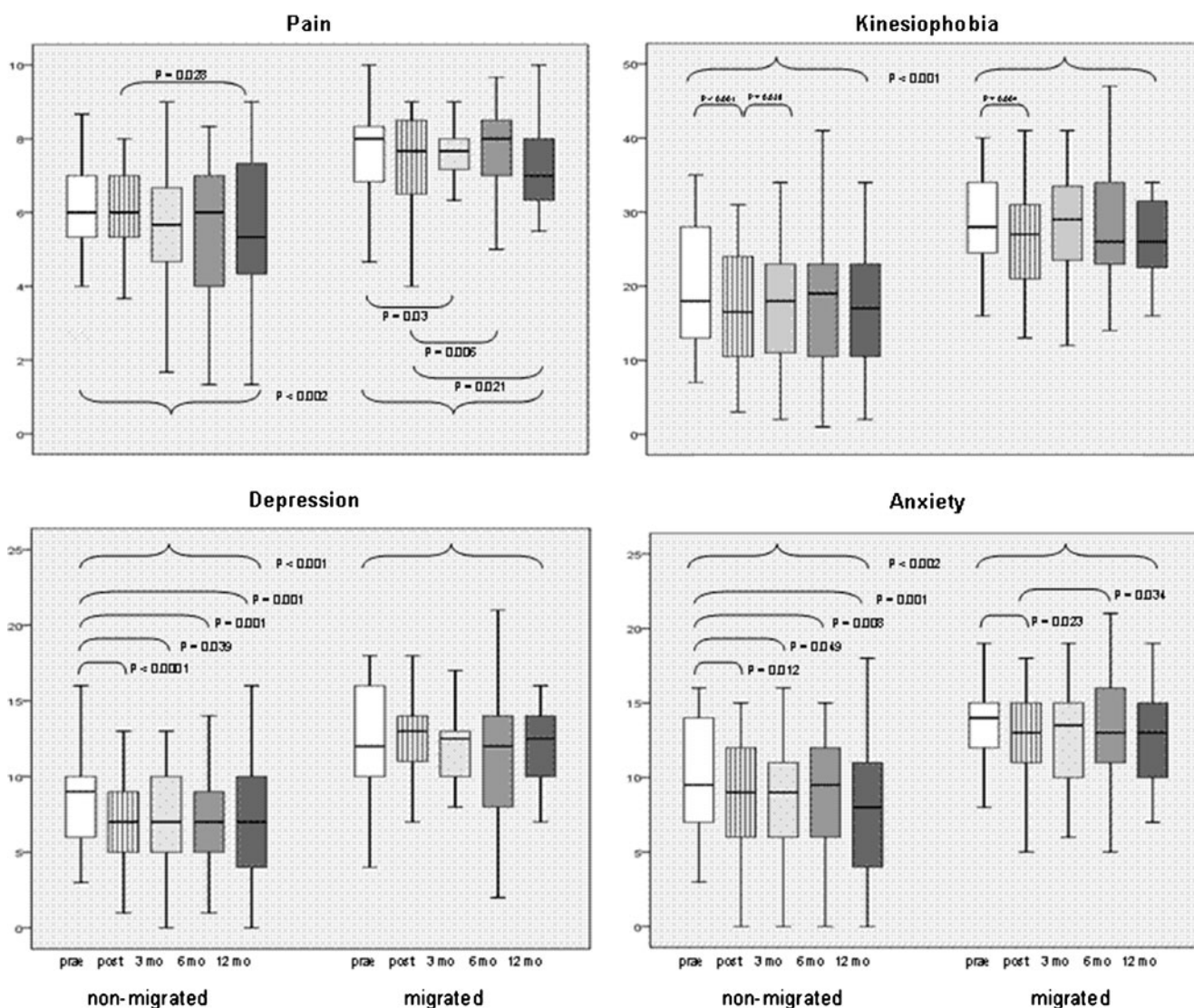
Figure 1 shows the different behaviour of chronic pain patients with and without migration background during the observation period of 1 year after the IOPP. The migrant group experienced more pain than the non-migrant group at any point in time. This difference is clinically relevant. Interestingly, there is a pronounced statistical difference with respect to the sub-items “today's pain” and “best pain intensity during the last month” in contrast to “worst pain during the last months”, which is not different between the groups.

The kinesiophobia score is clearly more prominent in the migrant group during all measured time points. They started with higher scores compared to the other group, improved just after the programme, but remained unchanged in the follow-ups compared to the starting (or baseline) score. All scores in the non-migrant group are statistically significantly

**Table 1** Socio-demographic data for 118 patients (91 women, 77 %; 27 men, 23 %)

	Group with migration background, $n$ (%)	Group without migration background, $n$ (%)
Gender		
Female	41 (35)	50 (42)
Male	9 (8)	18 (15)
Education		
No education	1 (2)	–
Compulsory school	20 (40)	3 (4)
>9 years	28 (56)	63 (93)
University	1 (2)	2 (3)
Capability to work		
100 % incapable	29 (58)	8 (12)
>50 % incapable	9 (18)	13 (19)
<50 % incapable	–	8 (12)
Worker's compensation		
100 %	1 (2)	6 (9)
<100 %	4 (8)	5 (7)





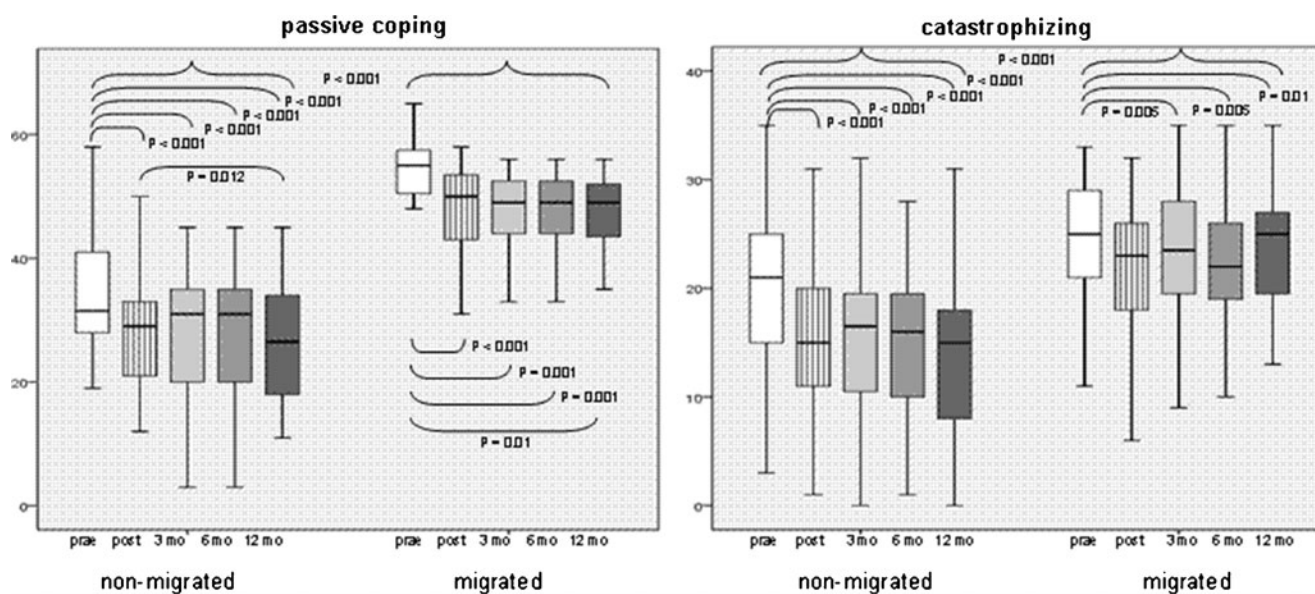
**Fig. 1** Boxplots of pain intensity (upper left panel), measured by Numeric Rating Scale; kinesiophobia (upper right panel), measured by Tampa Scale of Kinesiophobia; depression (lower left panel) and anxiety (lower right panel), measured by the Hospital Anxiety and Depression Scale. Non-migrant patients on the left panels, migrant patients on the right panels, respectively. White bars show the starting

score (*prae*) before the IOPP, lengthwise striped bars indicate the score after finishing the programme (*post*), grey (light, middling, dark) bars reflect the scores 3 months (3 *mo*), 6 months (6 *mo*) and 12 months (12 *mo*) after finishing the programme, respectively. *P* values indicate statistically significant differences between groups (curved brace) or time points within the group (plain bracket), respectively

lower in comparison to the migrant group. They clearly improved after the programme, but also returned to pre-treatment scores. A similar pattern emerges with respect to depression and anxiety: There is no improvement regarding depression in the migrant group at all points in time. The scores are elevated and of clinical relevance. The non-migrant group started lower, improved after the programme and remained stable till 1 year after the end of the programme. The scores were at the cut-off value for a probable clinical depression. The results of the Coping Strategies Questionnaire (CSQ) show that both groups have similar levels of active strategies (not shown) which remain virtually unchanged at all points in time. However, both

groups differ statistically significantly regarding the passive coping strategies (Fig. 2 demonstrates the differences in passive coping, in particular catastrophizing): the patients with migration background always entered with worse scores and remained with higher scores compared to the patients without migration background until the end of the observation period. However, all patients improved clearly at all points in time.

The patients with migration background had a much higher score for passive coping at the beginning of the programme. The score declined after the intervention period with similar values at 3-, 6- and 12-month follow-ups. The non-migrant group had a lower score at the beginning which



**Fig. 2** Boxplots of passive coping strategies in general (left) and in particular focused on catastrophizing (right), measured by Coping Strategy Questionnaire (German). Non-migrant patients on the left panels, migrant patients on the right panels, respectively. White bars show the starting score (*prae*) before the IOPP, lengthwise striped bars indicate the score after finishing the programme (*post*) and grey (light,

midling, dark) bars reflect the scores 3 months (3 *mo*), 6 months (6 *mo*) and 12 months (12 *mo*) after finishing the programme, respectively. *P* values indicate statistically significant differences between groups (curved brace) or time points within the group (plain bracket), respectively

declined at the end of the programme and rose to baseline values at the 3- and 6-month follow-ups. Interestingly, at the 1-year follow-up, the score dropped to its lowest level. Analysing the sub-item “catastrophizing” separately, the scores and the pattern of development for the patients without migration background were nearly identical to the course of the total score: in the group with migration background, the score for catastrophizing fluctuated during the whole observation period and returned to baseline level at the 12-month follow-up.

## Discussion

This study compared pain and psychological health status of patients with and without migration background before and after an 8-week IOPP. Patients without migration background improved on all outcome variables with the lowest values at the end of the 12-month observation period. In contrast, patients with migration background had a slight improvement only immediately after the programme. Catastrophizing remained reduced; the other variables returned to baseline level across time.

The findings add to and support previous research demonstrating that a certain group of migrant patients with chronic pain has a worse psychological health status [4, 6] and that migrant patients have to be seen as a rather heterogeneous group with some of them possibly experiencing ethnic disparities in pain treatment [7].

The literature on the effect of migration status on psychological health is contradictory: A recent representative population survey in Germany [24] found no differences in psychological health status between migrants and native Germans. On the contrary, the main body of the literature regularly points to differences in quality of life, psychological status and psychiatric diagnoses in patients with migration background compared to patients without migration background [4, 6]. A Swiss survey [25] provides a more detailed account of the health status of migrants: the German, Austrian and French migration groups were similar to the native Swiss population regarding social situation (education, income and work situation) and health situation (physical and psychological functioning). The other migrant groups (people from the Balkan countries, Sri Lanka, Turkey, Italy and Portugal) had worse results on all variables. The results of the current study mirror the latter findings and strengthen the assumption that patients with a migration background are a heterogeneous group. Taking the socio-demographic data into account, our results support the theory, suggested by previous studies [26, 27], that lower educational level and lower occupational class pose a higher risk for morbidity. The statistically higher scores on depression, anxiety, pain intensity and passive coping in the migrant group may indicate a potential referral bias. The migrant patients might have been referred to the special outpatient pain programme later in the course of their pain disorder than the non-migrant patients. Health care-provider-related ethnic and racial disparities in pain management are well documented [6,

28, 29]. They include, amongst others, an underestimation of pain, different utilization of available treatments and differences in pain medication. The late referral into a specialized pain programme would fall under the category of different utilization of available treatments, whereas the higher depression and anxiety levels might reflect an undertreatment of existing psychopathologies. Migration-specific issues could have negatively impacted on the pain experience. Forced migration, loss of family/friends, lack of social support, loss of social status, situation in the mother country and traumatic experiences before the migration are suggested as contributing to heightened emotional distress [30]. Nearly 70 % of our migrant patients came from the Balkan countries. Thus, it might be possible that their history may have involved trauma due to the recent war or due to forced flight from their country with subtle signs of a posttraumatic stress disorder revealing themselves as anxiety symptoms.

The analysis of the CSQ presented an obvious discrepancy between the two groups: Very high scores in the group with migration background contrasted with the moderate levels in the group without migration background. The differences were statistically significant at all time points. The fluctuation in the time course and pattern in the latter group might reflect a sort of trial and error phase in which the patients slowly develop new coping strategies with respect to their condition. This course could underpin the assumption that coping is a dynamic process with strategies evolving over time and stands in relation to the individual and situational contexts [31]. Although there is a decrease in the score of the passive coping strategies in the group with migration background after the intervention, the level is still rather high and virtually unchanged from the post-treatment measurement up to the last follow-up. Diverging attitudes and expectations towards the health care system between native patients and patients with migration background could be a reason for this discrepancy. In Switzerland, emphasis is put on self-responsibility for one's own health, and the patient is requested to actively take part in his/her rehabilitation. This might be in contrast to the role of the health care systems or the socially approved sick role behaviour in the migrant patients' countries of origin [32]. Furthermore, these patients could perceive their situation as an overwhelming experience with little possibility to alter it. Their high levels of catastrophizing might reflect this negative interpretation. One hypothesis is that helplessness and lack of social competence with regard to obtaining health care, social and financial support induce the situation. Due to the similar course of the variables *passive coping*, *depression*, *anxiety* and *high pain intensity* in our study, one may imply that they interact, are related to or perpetuate each other [33]. Demonstrating a decrease of all values across time, our results for the group without migration background are in accordance with these studies. The group

with migration background only experienced a small decline in the variable “passive strategies”. One might deduce that the reduction in passive coping was not large enough in this group to influence levels of anxiety and depression. Taking a closer look at the item *passive coping* by analysing the sub-item *catastrophizing* separately, the results of the group with migration background differ even more remarkably from the group without migration background. The scores of the former group were virtually the same at the beginning as well as at the 12-month follow-up measurements, slightly fluctuating during the observation period. Literature points to a strong link between catastrophizing and depression as well as anxiety and catastrophizing with the latter as a sort of precursor to clinically relevant anxiety levels [33]. A recent study showed that a reduction in catastrophizing predicted improvement in different outcome variables such as depression and pain-related anxiety [34]. This is in accordance with two other studies in which catastrophizing was shown to mediate the outcome of physical as well as cognitive-behavioural therapy [35, 36]. Our findings are in line with the results of the above-mentioned literature. On the other hand, the group with migration background experienced no long-term improvement in catastrophizing. Issues regarding the social contextual factors, such as the degree of integration into Swiss society or cultural differences, have to be taken into account, since social issues are suggested to be key factors for the development and perpetuation of catastrophizing [33].

The question arises why the migrant group, in comparison to the non-migrant group, did not benefit as much from the active approach and, even more so, from the cognitive-behavioural approach (the latter is an integral part of the one-to-one as well as the psychological group sessions) despite receiving the same treatment intensities and modalities during the 8-week programme. Merry et al. suggested ethnic factors as one potential reason for differences in treatment-related benefits in African-Americans and Whites participating in a 4-week multidisciplinary pain treatment [37]. Due to the fact that we did not control for ethnicity as a confounder or moderator, one can only hypothesize that ethnicity might play a role in causing the observed differences in treatment outcome.

Education as one barrier or moderator for improvement cannot be ruled out. It is suggested that less educated persons from foreign cultures who grew up in rural areas seem to be less able to self-reflect. In addition, they might partly lack the skill for inductive and deductive thought processes necessary for cognitive-behavioural therapy therefore benefitting less from the presented information [38]. One possible reason might be that highly sophisticated language skills are necessary in order to benefit from this kind of treatment, and the concerned patients might not have fulfilled this requirement. This could have been the case



because these skills are of vital importance for the psychological group sessions, pain education and the relaxation/meditation sessions.

Regarding the discrepancy between the groups of the outcome variables *depression*, *anxiety* and *catastrophizing*, the authors hypothesize that the initial level of these variables in the migrant group was so high that it might have warranted a very specific and intensive psychotherapeutic approach to address the psychopathological findings of depression and anxiety. In addition, 8 weeks of psychotherapeutic intervention seems to be too short for a substantial improvement in these kinds of disorders. It may be that the baseline socio-demographic variables, i.e. ethnicity and education, as well as the baseline clinical characteristics of anxiety and depression act as moderators of the treatment outcome. There is accumulating evidence that race and education are moderators for outcome [12, 36]. Bearing this fact in mind, the authors hypothesize that higher education and very high proficiency of the language of the host country may explain why a minority of the migrant patients did well in the programme.

Looking at the issue from a biopsychosocial point of view, one must not forget that the social problems such as (un)employment and migration-specific factors might have constituted, in their own right, an important barrier to improvement. As there were no major changes in workability throughout the entire period, this fact might have perpetuated the emotional distress, thus preventing a substantial improvement in psychological functioning. In addition, literature mentions depression consistently as a major barrier to effective pain treatment and improved functional outcome in rehabilitation [39, 40]. The above-mentioned facts raise the question which mechanisms operate that the migrant status might result in worse psychological functioning as well as higher pain severity. We can only hypothesize on the potential mediators in our migrant patient group: a lack of appropriate coping skills to handle the heightened emotional distress due to war-related experiences. The overwhelming emotional situation could have caused and still perpetuate anxiety and depressive symptoms. The cognitive interpretation of the ongoing pain experience (catastrophizing) might have added to the distress and thus influenced the pain perception resulting in increased pain intensity. Lack of education and professional training force migrants frequently into highly demanding manual jobs. Physical work is their only possibility to earn money; consequently, workability might be seriously affected by pain. This could lead to unemployment resulting in a precarious financial and social situation with loss of self-esteem. The ensuing emotional stress and worry could increase pain and set up a vicious cycle of symptom and pain reinforcement. In addition, cultural beliefs and norms concerning psychological problems might lead to reluctance

in seeking appropriate medical help for depression and/or anxiety symptoms early on with subsequent higher levels of co-morbidities.

Our study has a number of limitations: It is an observational study within the frame of quality control. Therefore, a well designed control group is not available. Referral and assessment bias might have affected the sample. Thirty-one percent of the people in Zurich are migrants, whereas in the programme, migrants constituted 46.2 %. Reasons could be manifold, e.g. due to communication and transcultural difficulties, general practitioners might refer their migrant patients with chronic pain more readily to a specialized university clinic than their native patients. On the other hand, the high number might reflect the situation of certain areas in the city where more jobs are available than in other parts. Furthermore, the results of the (validated) questionnaires might have been confounded, because they were handed out in German and not in the mother languages of the patients. The questionnaires require a very sophisticated level of German language proficiency, definitely exceeding the language level in a day-to-day setting. This requirement might have demanded too much from the migrants with foreign mother language. Due to the relatively small number of patients, we did not do an analysis of the data with respect to the country of origin to explore the possibility of a difference between ethnic groups, nor did we perform an analysis with respect to the influence of socio-economic conditions on the treatment outcome in the migration group.

## Conclusions

Our study is particularly focused on the situation in Zürich but comparable to other big cities in industrialized countries; neither the percentage of the different ethnic groups nor the socio-demographic characteristics of the migrants in the sample are representative of the heterogeneous migration population in the host country. Therefore, any generalization should be treated with caution. Lastly, we lost a certain percentage of patients during the follow-up observation period. This fact might bias our data because we do not have information about the course of the disease for the participants who dropped out.

No light can be shed on the question to what extent the psychological factors influence treatment or which variable predominantly affects the outcome. Due to the design of the study, a relationship between the different psychological variables can only be assumed. Furthermore, anxiety, depression, ethnic background and education might all have had an interactive effect with the treatment modalities on outcome. The results clearly highlight the need to further investigate the role of moderators and mediators in the treatment of chronic pain patients with migration



background in order to effectively and efficiently target modifiable factors.

In summary, the results of the study demonstrate that chronic non-malignant pain patients with migration background have worse levels of pain and psychological health status at baseline and much less improvement after an 8-week IOPP aimed at increasing quality of life than patients without migration background. The findings suggest that, in order to enhance psychological well-being and functional status, pain treatments have to take into account the special needs of this patient group. This might include culture and language-sensitive assessments, treatment and patient education. Perhaps, a more physically active approach, specifically aimed at improving valued activities of daily living while focusing on problem and task solving, would reduce passive coping. Long-term psychotherapeutic intervention after the programme might be needed to address the psychopathological disorders effectively. In addition, tackling the social problems in close cooperation with other services or case managers might help to reduce the emotional distress.

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